[*Crown Copyright Reserved.*

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

No. 6] [1916

XXVII.—AFRICAN ANONACEAE.

T. A. Sprague and J. Hutchinson.

The great increase in our knowledge of the Tropical African flora since the publication of the first volume of the Flora of Tropical Africa is well illustrated by the family *Anonaceae*. In 1868 only 13 genera and 59 species of *Anonaceae* were known from Tropical Africa, whereas in 1901 there were 23 genera and 170 species recorded. At the present date 27 genera are known.

An illustrated monograph of African *Anonaceae* by Engler and Diels was published in 1901,* and supplementary papers by Diels appeared in 1907, 1908 and 1915.† Two new genera were described by E. G. Baker in 1913,‡ and one by De Wildeman in 1914.§

Whilst identifying the *Anonaceae* of a large collection received from Mr. N. W. Thomas, Government Anthropologist, Sierra Leone, the writers experienced considerable difficulty in determining the more critical genera owing to the lack of a workable key. Engler and Diels have given a conspectus of the genera of *Anonaceae* arranged in sub-families, tribes and subtribes, but there is so little contrast in the characters of the groups, that it is difficult to determine the genera in many cases. The key to the African genera given by Thonner‖ has the same drawback, though to a less extent. An artificial key to the African genera has therefore been prepared, in which prominence has been given to the more readily ascertainable characters. This is supplemented by a list of the less common characters and the genera in which they occur.

* Engler, Monogr. Afr. Pfl. vol. vi. (1901).

† Engl. Jahrb. vol. xxxix. pp. 469–486; l.c. xli. pp. 328–329; l.c. liii. pp. 434–448.

‡ Catalogue of Talbot's Nigerian Plants, pp. 2, 5 (1913).

§ Fedde, Repert. vol. xiii. p. 383 (1914).

‖ Die Blütenpflanzen Afrikas, p. 218 (1908).

(4474.) Wt. 71—728. 1,125. 7/16. J. T. & S., Ltd. G. 14.

It has been found necessary to revise the generic limits of *Cleistopholis*, *Unona* and *Uvaria* as extended by Engler and Diels, and to transfer several species from them to *Oxymitra* and *Uvariastrum*. These transferences are discussed under the genera in question. A few new species are also described. In order to facilitate reference, the genera dealt with are arranged alphabetically.

CLAVIS GENERUM AFRICANORUM ANONACEARUM.

Indumentum lepidotum ... ... *Meiocarpidium.*
Indumentum haud lepidotum :—
Inflorescentia oppositifolia ; rhachis incrassata, adunca ... ... *Artabotrys.*

Rhachis haud adunca :—
Gynoecium syncarpum ovario uniloculari :—
Petala biseriata, exteriora interdum basi connata ... ... *Monodora.*
Petala uniseriata, connata ... ... *Isolona.*

Gynoecium apocarpum, sed pistilla a juventute concrescentia :—
Indumentum stellatum ; petala valde imbricata ; ovula numerosa ... ... *Pachypodanthium.*

Indumentum haud stellatum ; ovula solitaria : —
Rhipidium pluriflorum ; flores bracteolis binis oppositis basi connatis instructi *Anonidium.*
Inflorescentia 1–2-flora ; bracteolae solitariae ... ... *Anona.*

Gynoecium apocarpum pistillis inter se liberis :—
Corolla gamopetala :—
Flores dimeri ; connectivum ultra thecas haud productum ... ... *Uvariopsis.*
Flores trimeri ; connectivum ultra thecas productum :—
Petala tranverse plicata ... ... *Hexalobus.*
Petala haud transverse plicata ... *Asteranthe.*

Corolla polypetala :—
Petala 3 :—
Flores dioici, longipedunculati, in trunco fasciculati ... ... *Thonnera.*
Flores hermaphroditi, e ramulis orti :—
Petala sepalis opposita ... ... *Enantia.*
Petala sepalis alternantia ... ... *Dennettia.*

Petala 4 vel 6, uniseriata, valvata :—
Flores dioici ; petala 4 ; stamina numerosissima ... ... *Tetrastemma.*
Flores hermaphroditi ; petala 6 ; stamina 12 ... ... *Monanthotaxis.*

Petala 6, biseriata :—
Petala interiora exterioribus sepaloideis multo longiora; ovaria stigmate communi conjuncta :—
Flores fasciculati ... ... *Brieya.*
Flores haud fasciculati ... ... *Piptostigma.*
Petala interiora exterioribus haud longiora :—
Antherae locellatae; styli in conum centralem conniventes ... *Xylopia.*
Antherae haud locellatae; styli haud conniventes :—
Petala exteriora vel omnia in duas partes inferiorem concavam superiorem ligularem (appendicem dorsalem) divisa :—
Petala exteriora tantum appendice dorsali instructa *Stenanthera.*
Petala omnia appendice dorsali instructa :—
Petala interiora intus apice partis inferioris hamata... *Artabotrys aurantiodorus.*
Petala interiora haud hamata *Polyceratocarpus.*
Petala in partem inferiorem concavam et superiorem ligularem haud divisa :—
Petala saltem interiora imbricata :—
Petala exteriora patentia, plana, oblonga vel ligularia, interioribus concavis multo longiora; stigma sessile, punctiforme, minutum; ovula 1–2; semina tuberculata *Cleistopholis.*
Petala exteriora interioribus sat similia; stigma sessile, conspicuum; ovula numerosa; semina laevia; indumentum plerumque stellatum ... *Uvaria.*
Petala exteriora interioribus sat similia; stylus saepius manifestus stigmate plerumque bilobo; ovula 1–8; semina laevia *Popowia.*
Petala omnia valvata :—
Sepala petala in alabastro omnino obtegentia; petala interiora a basi ad apicem contigua ... *Uvariastrum.*

Sepala petala in alabastro haud obtegentia vel, si obtegentia, petala interiora superne tantum contigua :—
Petala exteriora interioribus manifeste longiora ; petala interiora superne conniventia inferne interstitiis triangularibus separata ... ... *Oxymitra.*
Petala subaequilonga :—
Alabastra oblonga :—
Ovula 1–2 ; fructus stipitati, breves, recti ... ... *Polyalthia.*
Ovula numerosa ; fructus sessiles, elongati, valde arcuati ... ... *Polyceratocarpus.*
Alabastra subglobosa :—
Ovula 1–8 ; stigma plus minusve bilobum ... ... *Popowia.*
Ovula circiter 22 ; stigma pileato-capitatum ... *Alphonseopsis.*

CHARACTERS OCCURRING IN RELATIVELY FEW GENERA.

1. Hairy covering.
   Peltate scales: *Meiocarpidium.*
   Stellate hairs: *Uvaria* (exc. sect. *Uvariodendron*), *Pachypodanthium*, *Enantia polycarpa.*
2. Inflorescence.
   Distinct, several-flowered inflorescences with well-developed rhachis: *Anonidium*, *Piptostigma*, *Artabotrys*, *Oxymitra albida*, *Monanthotaxis.*
   Hooked rhachis: *Artabotrys* (exc. *A. aurantiodorus*).
   Cauliflory: *Uvaria* sect. *Uvariodendron*, *Uvariastrum Zenkeri*, *Tetrastemma*, *Thonnera.*
3. Flowers.
   Dimerous: *Uvariopsis*, *Tetrastemma.*
   Unisexual: *Tetrastemma*, *Thonnera*, *Uvariopsis*, *Anonidium*, *Polyalthia* spp., *Popowia* spp.
4. Corolla.
   Gamopetalous: *Asteranthe*, *Uvariopsis*, *Hexalobus*, *Isolona*, *Monodora* spp.
   Petals 3: *Enantia* (opposite the sepals), *Dennettia* (alternate with the sepals), *Thonnera.*
   Petals 4: *Tetrastemma*, *Uvariopsis*, *Monanthotaxis.*
   Petals imbricate (both whorls or only the inner one):

Uvaria, Asteranthe, Pachypodanthium, Cleistopholis, Anonidium, Popowia spp.

Petals transversely plicate: *Hexalobus.*

Petals dorsally appendaged: *Stenanthera, Xylopia, Artabotrys.*

Inner petals much larger than the outer: *Piptostigma, Brieya.*

5. Androecium.

Stamens definite: *Monanthotaxis* (12), *Popowia* spp.

Anthers locellate: *Xylopia.*

Connective not produced beyond the thecae: *Thonnera, Tetrastemma, Uvariopsis.*

6. Gynoecium.

Syncarpous, with parietal placentation: *Isolona, Monodora.*

Apocarpous, with concrescent pistils: *Anonidium, Pachypodanthium, Anona.*

Ovaries united by a common stigma: *Piptostigma, Brieya.*

Styles connivent in a central cone: *Xylopia.*

7. Seeds.

Tuberculate: *Cleistopholis.*

Artabotrys hispida, sp. nov.; affinis *A. velutino*, Scott Elliot, sed ramulis hornotinis pilis patulis densiuscule hispidis, foliis acuminatis basi rotundatis, pedunculis subunifloris, petalis multo longioribus differt.

Rami annotini teretes, circiter 4 mm. diametro, patule hispidi, demum glabri vel fere glabri; ramuli hornotini laxe foliati, breves, 1·25 mm. diametro, pilis patulis brunneis densiuscule hispidi; gemmae terminales ambitu lineari-lanceolatae, subacutae, 8 mm. longae, dense sericeo-villosae. *Folia* oblonga vel oblongo-elliptica, basi rotundata, apice subabrupte et obtuse acuminata (acumine 5 mm. longo), 4-8·5 cm. longa, 1·7-3 cm. lata, chartacea, supra glabra et minutissime punctulata, infra reticulata, praecipue in costa media brunneo-pilosa; costa supra plana, infra prominens; nervi laterales utrinsecus 8-10, a costa sub-angulo lato abeuntes, intra marginem prominenter conjuncti et ramosi, supra leviter prominuli, infra subprominentes; petioli 2-2·5 mm. longi, dense hispidi. *Pedunculi* oppositifolii, subuniflori, 1-1·5 cm. longi, recurvati et incrassati, hirsuti. *Sepala* 3, ovato-triangularia, acuta, 3 mm. longa, 1·75-2 mm. lata, extra parce pilosa, intra glabra. *Petala* aequalia, e basi late ovato intra concavo 2 mm. longo 2·25 mm. lato linearia, subteretia, obtusa vel subacuta, 1·2 cm. longa, medio 0·75 mm. crassa, ad apicem leviter attenuata, breviter appresse pubescentia. *Stamina* circiter 20; antherae subsessiles; thecae 0·75 mm. longae, connectivo apice peltato plano circiter 0·75 mm. diametro glabro. *Carpella* 6, sessilia, leviter obliqua, 1 mm. longa, glabra, 2-ovulata, ovulis collateralibus erectis, stigmate linguiformi patulo subelliptico 0·5 mm. longo glabro coronata. *Torus* dense villoso-hirsutus. *Fructus* non visus.

Distrib. Sierra Leone: Roruks, Nov., fl., *Thomas* 5770.

Cleistochlamys, *Oliv.* in Journ. Linn. Soc. vol. ix. p. 175; Fl. Trop. Afr. vol. i. p. 24.*

Oliver stated that the salient characters of *Cleistochlamys* were: "the sepals wholly connate, forming a closed, at length vertically ruptured calyx; the imbricate inner petals (which with the truncate anthers place it in the tribe Uvarieae), and the very small, usually solitary, axillary, sessile flowers." The genus has been recognised by all subsequent writers, but is inseparable from the group of African species referred to *Popowia* by Engler and Diels. The fact that the calyx is closed in the young bud cannot be considered as a generic character: a closed calyx is characteristic of the young flower-buds of *Uvaria Chamae*, Beauv.; this opens at the top, and remains as a cup round the petals for a considerable time, finally separating more or less into lobes; whereas in other species of *Uvaria* the sepals are more or less free from an early stage. The period at which the sepals separate from one another depends largely on the size of the petals relatively to the sepals.

Imbricate inner petals occur in some of the African† species of *Popowia* (e.g., *P. gracilis*, Oliv.). Engler and Diels mention this fact in their conspectus of genera (l.c. 5), but omit it from the diagnosis of *Popowia* (l.c. 43), in which they describe the petals as valvate.

The facies of *Cleistochlamys Kirkii* and the form of the stamens and pistils are quite those of a *Popowia*,‡ and we accordingly restore it to this genus in which it was originally placed by Bentham. The synonymy and geographical distribution are given under *Popowia*.

Cleistopholis, *Pierre ex Engler* in Engl. & Prantl., Nat. Pflanzenfam. Nachtr. p. 160 (1897); Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 33, excl. spp.; Diels in Engl. Jahrb. vol. liii. p. 439; *Oxymitra*, Baillon, Hist. Pl. vol. i. pp. 235, 286, ff. 282, 283, quoad *O. patens*.

A very distinct genus characterised by oblong outer petals, much shorter, more or less imbricate inner petals, biovulate or uniovulate pistils, sessile stigmas and tuberculate seeds. Engler and Diels, l.c. 34, included three species§ which differ from their own definition of *Cleistopholis* in possessing ovate or ovate-lanceolate outer petals, and valvate inner petals connate above. These are now transferred to *Oxymitra*. The following species are retained by us in *Cleistopholis*:—

1. **C. glauca,** *Pierre ex Engl. & Diels*, l.c. 35 (1901).
Distrib. Gaboon.

2. **C. Staudtii,** *Engl. & Diels*, l.c.; Diels in Engl. Jahrb. vol. liii. p. 439. *Oxymitra Staudtii*, Engl. & Diels in Notizbl. Bot. Gart. Berlin, vol. ii. p. 297 (1899). *Polyalthia crassipes*, Engl. in Engl. Jahrb. vol. xxxix. p. 477.
Distrib. Cameroons.

---

* For the remaining references see under *Popowia*, p. 156–7.

† *Popowia Kurzii*, King, a native of the Andaman Islands and Burma, also has imbricate inner petals (King, Materials Fl. Mal. Penins. vol. i. p. 345).

‡ As understood by Engler and Diels.

§ *C. albida*, *C. gracilipes* and *C. platypetala*.

3. **C. myristiciflora,** *Diels & Mildbr.* in Engl. Jahrb. vol. liii. p. 439 (1915).

Distrib. Cameroons.

4. **C. patens,** *Engl. & Diels* in Engl. Monogr. Afr. Pfl. vol. vi. p. 35. *Oxymitra patens,* Benth. in Trans. Linn. Soc. vol. xxiii. p. 472, t. 51; Oliv. Fl. Trop. Afr. vol. i. p. 34.

Distrib. Sierra Leone to Gaboon.

5. **C. Klaineana,** *Pierre ex Engl. & Diels,* l.c. 35, t. 13, A (1901).

Distrib. Gaboon.

6. **C. grandiflora,** *De Wild.* in Ann. Mus. Congo, Sér. 5, vol. i. p. 39, t. 21 (1903).

Distrib. Lower Congo.

Cleistopholis discostigma, Diels in Engl. Jahrb. vol. xxxix. p. 474 (1907), differs from all the other species in its sepals and petals being all alike, and should be excluded from the genus. There are no flowers on the Kew specimen. Diels originally stated that it was allied to *C. glauca,* Pierre, but subsequently (l.c. liii. p. 439) mentioned that *C. albida,* Engl. et Diels, was apparently its nearest ally. It is, therefore, probably a species of *Oxymitra.*

Isolona, *Engl.* in Engl. & Prantl. Nat. Pflanzenfam. Nachtr. i. p. 161 (1897); Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 82.

Isolona differs from *Monodora* in its uniseriately arranged petals united into a gamopetalous corolla. It is endemic in Africa. Seven species were described by Engler and Diels, l.c., and six more have been published recently.* The following species appears to be new:—

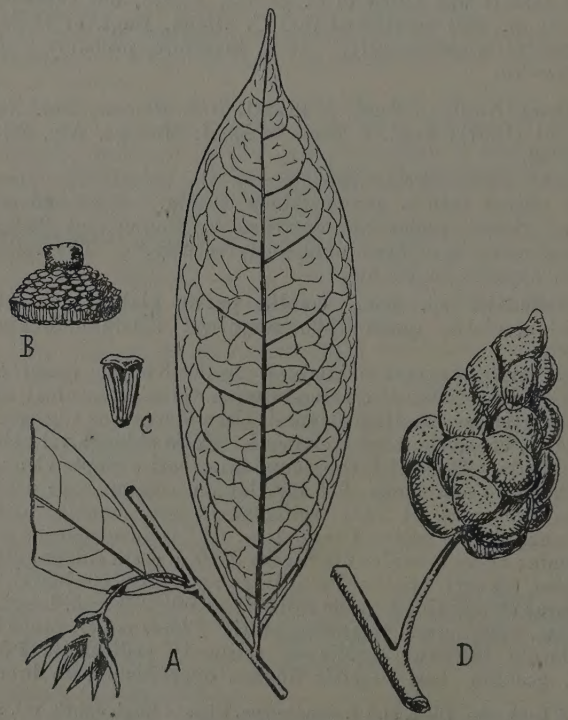
I. leonensis, sp. nov., corolla parva glabra, lobis triangulari-lanceolatis quam tubo sesqui-vel subduplo-longioribus distincta.

Rami leviter flexuosi, subteretes, circiter 3·5 mm. crassi, longitudinaliter verruculosi, cinereo-brunnei vel nigrescentes; ramuli juniores graciles, paullum flexuosi, sicco plerumque nigrescentes, angulares, conspicue nigro-verrucosi. *Folia* oblonga vel oblongo-oblanceolata, obtuse et longe acuminata, basi abrupte et anguste cuneata, 8–15 cm. longa, 2–5 cm. lata, utrinque saepe nitidula, glabra, conspicue et laxe reticulata; costa media utrinque prominens, basi circiter 1 mm. lata, ad laminae apicem sensim attenuata; nervi laterales utrinsecus 8–10, a costa sub angulo lato abeuntes, arcuati, circiter 1 cm. intra marginem conjuncti, inter juncturas et marginem valde ramosi; petioli 2–3 mm. longi, 1·5–1·75 mm. crassi, arcte verrucosi, nigri. *Flores* pauci, prope basin ramulorum juniorum axillares, solitarii; pedicelli 1–1·5 cm. longi, graciles, basi bracteis duabus oppositis medio bracteola

* *I. leucantha,* Diels, and *I. pleurocarpa,* Diels in Engl. Jahrb. vol. xxxix., p. 484 (1907), et l.c. liii. p. 447 (Cameroons); *I. pilosa,* Diels, l.c. xli. p. 328 (1908), et l.c. liii. p. 448 (Belgian Congo and Cameroons); *I. Bruneelii,* De Wild., *I. Sereti,* De Wild., *I. Solheidii,* De Wild. in Ann. Mus. Congo, Sér. 5, vol. iii. p. 82 (1909) (Belgian Congo).

solitaria instructi, nigri, dense verrucosi; bracteae oblongae, obtusae, circiter 1 mm. longae, glabrae. *Sepala* ovato-rotundata, 3·5 mm. longa et lata, trinervia, minute verrucosa. *Corolla* glabra; tubus inferne depresso-globosus, medio constrictus, superne in limbum 6-lobatum expansus, 4 mm. longus, medio circiter 3·5 mm. diametro; lobi subaequales, patentes, triangulari-lanceolati, acuti, 5–7 mm. longi, basi 2·5–3·5 mm. lati, subconspicue trinervii. *Stamina* numerosa; antherae subsessiles, 0·75 mm. latae; thecae distinctae, 0·5 mm. longae, connectivo apice ampliato et complanato ambitu transverse oblongo-elliptico. *Stigma* antheras superans, capitatum, 1 mm. altum, 1·75 mm. diametro, verruculosum. *Fructus* lobulatus, ovoideus vel oblongo-ovoideus, 4-5 cm. longus, 2–3 cm. diametro, sicco niger, lobulis verrucosis; pedicelli fructiferi leviter curvati, 1·5–2 cm. longi, 1·75–2·5 mm. crassi.

Distrib. Sierra Leone: Sendugu, fl. June, *Thomas* 687; Yonibana, *Thomas* 4230, 4259, 4690, 4962; Mamaha, *Thomas* 4593, 4648—found in both flower and fruit in October and November.



Isolona leonensis, Sprague et Hutchinson.

A, portion of flowering shoot, nat. size; B, stamens and pistil, × 4; C, stamen, × 10; D, fruit, nat. size.

Oxymitra, *Hook. f. & Thoms.* Fl. Ind. vol. i. p. 145 (1855); Benth. & Hook. f. Gen. Pl. vol. i. p. 26; King in Ann. Bot. Gard. Calcutta, vol. iv. part 1, p. 123. *Polyalthia,* sect. *Oxymitra,* Blume, Fl. Jav. Anonac. p. 71 (1828). *Unona,* Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 39, excl. citationibus genericis, descriptione et *U. Stuhlmannii;* non Linn. f.

To *Oxymitra* we refer four out of the five African species included by Engler and Diels in *Unona,* in addition to three which they placed in *Cleistopholis* (*C. albida, C. gracilipes* and *C. platypetala*).

As Safford has pointed out,* *Unona,* Linn. f., is a synonym of *Xylopia;* and the Asiatic species hitherto included under *Unona* are referable to *Desmos,* Lour., and *Dasymaschalon,* Dalle Torre & Harms.

Engler and Diels, l.c., stated that the sole difference between *Popowia* (sensu latiore) and "*Unona*" [=*Desmos*] is that the inner petals are erect and connivent in the former, spreading in the latter; but four of the five species included by them in "*Unona*" have connivent petals, and should therefore, on their own showing, be placed in *Popowia.*

Popowia, however, has the inner petals free from one another† and often slightly imbricate,‡ whereas the species under consideration have valvate inner petals connate above into a cone and separated below by subtriangular window-like spaces through which the stamens may be seen. A corolla of this kind is characteristic of *Goniothalamus* and *Oxymitra.* These two genera are so closely allied that it is difficult to find technical characters to separate them. According to King, the inner petals are clawed in *Goniothalamus,* not clawed in *Oxymitra,* and the lateral nerves form intramarginal loops in the former but not in the latter. *Goniothalamus* also appears to have a more or less elongated style, whereas the Indian species of *Oxymitra* have a short style, or none. The character of clawed or not clawed petals hardly seems to hold good. On the whole, it seems best to refer the African species under consideration provisionally to *Oxymitra,* on account of the nature of their venation, while recognising that they belong to several different natural groups, which may eventually have to be treated as distinct genera when their characters are better known.

O. albida, O. longipedicellata and *O. gracilipes* have distinct styles and subcylindric fruits§. *O. gracilis, O. rosea, O. Soyauxii* and *O. montana,* on the other hand, have sessile or subsessile capitate stigmas and moniliform fruits (biarticulate or ellipsoid in *O. Soyauxii*). Another type is represented by *O. hirsuta* and *O. velutina,* which have relatively narrow, long, accuminate inner petals, and sausage-shaped, 1-seeded (rarely 2-seeded) fruits. The African species referred by us to *Oxymitra* are the following:—

1. **O. albida.**—*Unona albida,* Engl. in Notizbl. Bot. Gart.

* Bull. Torr. Bot. Club, 1912, vol. xxxix. p. 504.
† King in Ann. Bot. Gard. Calcutta, vol. iv. part 1, p. 116.
‡ Engl. Monogr. Afr. Pfl. vol vi. p. 5.
§ Only known in *O. longipedicellata.*

Berlin, vol. ii. p. 297 (1899). *Cleistopholis albida*, Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 34, t. 12A.

Distrib. Cameroons.

2. **O. longipedicellata,** sp. nov.; affinis *O. albidae*, Sprague & Hutchinson, a qua sepalis inferne plus minusve confluentibus, petalis exterioribus pro rata angustiora, staminibus pistillisque subduplo paucioribus, necnon pedicellis longioribus recedit.—*Cleistopholis albida* var. *longipedicellata*, E. G. Baker in Cat. Talbot's Nigerian Pl. p. 3 (1913).

Sepala ovato-deltoidea, apiculata, basi plus minusve connata, 2–2·5 mm. longa, 3·5 mm. lata. *Petala* exteriora anguste cordato-ovata, 8–9 mm. longa, 5mm. lata; petala interiora ovato-lanceolata, acuta, ungue brevi horizontali incluso 6·5 mm. longa, vix 3·5 mm. lata, 3–4 mm. contigua. *Stamina* circiter 65. *Pistilla* circiter 24.

Distrib. Southern Nigeria.

3. **O. gracilipes,** *Benth.* in Trans. Linn. Soc. vol. xxiii. p. 471 (1862). *Cleistopholis gracilipes*, Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 34.

Distrib. Fernando Po.

4. **O. gracilis.**—*Uvaria gracilis*, Hook. f. in Hook. Niger Fl. 210 (1849); Oliv. Fl. Trop. Afr. vol. i. p. 22; Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 22. *Oxymitra platypetala*, Benth. in Trans. Linn. Soc. vol. xxiii. p. 472 (1862); Oliv. l.c. 33. *Cleistopholis platypetala*, Engl. & Diels, l.c. 34. *Unona Millenii*, Engl. & Diels, l.c. 40.

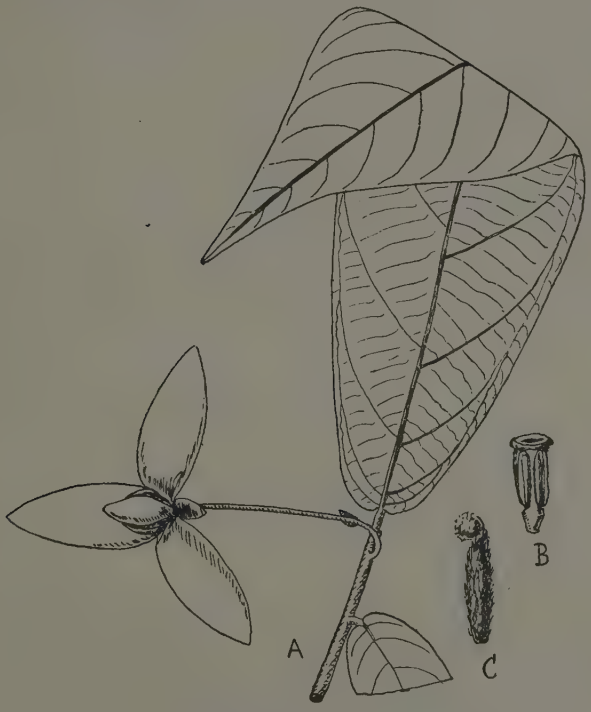
Distrib. Sierra Leone, Lagos.

5. **O. rosea,** sp. nov.; affinis *O. gracili*, Sprague & Hutchinson, foliis subcaudato-acuminatis, petalis exterioribus longioribus ovato-lanceolatis differt.

Ramuli leviter flexuosi, graciles, cortice cinereo glabrescente prominenter lenticellato obtecti. *Folia* obovato-oblonga vel oblonga, apice longe subcaudato-acuminata, subobtusa, acumine 1-2·5 cm. longo, basi rotundata et paulum auriculata, 7-14 cm. longa, 2·5-4·5 cm. lata, tenuiter chartacea, glabra vel infra minutissime pubescentia, infra plus minusve glauca; costa media supra impressa, infra prominens, verruculosa et interdum minute et adpresse pubescens; nervi laterales utrinque 9-11, leviter arcuati, a costa sub angulo 60°–70° abeuntes, supra distincti, infra prominentes, intra marginem flexuosi et conjuncti; nervi tertiarii utrinque prominuli, subparalleli; petioli 2-4 mm. longi. *Flores* supra-axillares, solitarii; pedicelli graciles, 1·5-2·5 cm. longi, minute puberuli, basin versus bractea ovata obtusa 1·25 mm. longa muniti. *Sepala* mox reflexa, ovata vel ovato-lanceolata, subobtusa, circiter 3·5 mm. longa et 2·5 mm. lata, coriacea, glabrescentia. *Petala* exteriora patentia, ovato-lanceolata, subobtusa, 2 cm. longa, plerumque circiter 1 cm. lata, coriacea, utrinque puberula; petala interiora conniventia, elliptico-rhomboidea, obtusa, 1 cm. longa, 0·5 cm. lata, coriacea, extra puberula. *Stamina* numerosa; filamenta 0·3–0·4 mm.

longa; thecae 0·75 mm. longae, connectivo plano ampliato glabro. *Carpella* numerosa, subclavata, 3–4 mm. longa, dense adpresse brunneo-setulosa, stigmate sessili magno capitato grosse papilloso coronata. *Ovula* 5.

Distrib. Southern Nigeria: Oban, *Talbot* 199 (Herb. Mus. Brit.).



Oxymitra rosea, Sprague et Hutchinson.

A, part of flowering shoot, nat. size; B, stamen, × 10; C, carpel, × 5.

6. **O. Soyauxii.***—*Unona glauca*, Engl. & Diels in Notizbl. Bot. Gart. Berlin, vol. ii. p. 296 (1899); Monogr. Afr. Pfl., vol. vi. p. 40.

Distrib. Gaboon, Belgian Congo.

7. **O. montana.**—*Unona montana*, Engl. & Diels in Notizbl. Bot. Gart. Berlin, vol. ii. p. 296 (1899); Monogr. Afr. Pfl., vol. vi. p. 40.

Distrib. Cameroons.

8. **O. hirsuta.**—*Unona hirsuta*, Benth. in Trans. Linn. Soc. vol. xxiii. p. 469 (1862); Oliv. Fl. Trop. Afr. vol. i. p. 35; Engl. et Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 39.

Distrib. Sierra Leone (*Scott Elliot* 4854), Fernando Po.

---

* Specific name changed on account of the pre-existing *O. glauca*, Hook. f. et Thoms., a native of the Malay Peninsula and Sumatra.

9. **O. velutina,** sp. nov.; affinis *O. hirsutae,* Sprague & Hutchinson, sed foliis ad basin angustatis apice breviter acuminatis, monocarpiis adpresse velutinis nec hispidis differt.

Ramuli flexuosi, rufo-tomentelli vel tomentosi. *Folia* oblongo-elliptica vel oblongo-oblanceolata, breviter et obtuse acuminata, in basin cordatam vel subauriculatam leviter angustata, 9–18 cm. longa, 3–6·5 cm. lata, chartacea, supra costa hirsuta excepta glabra, infra rufo-pilosa; costa media infra prominens, velutino-tomentosa; nervi laterales utrinque 11–13, a costa sub angulo circiter 60° abeuntes, prope marginem curvati et obscure conjuncti, supra distincti, infra prominentes; nervi tertiarii numerosi, paralleli, infra conspicui; petioli robusti, 3–6 mm. longi, dense velutino-tomentosi. *Pedicelli* supra-axillares vel oppositifolii, circiter 1 cm. longi, circiter 1·5 mm. crassi, velutino-tomentosi. *Sepala* demum reflexa, ovata, obtusa, 3–4 mm. longa, 4 mm. lata, coriacea, intra parce puberula, extra breviter tomentosa. *Petala* exteriora ovato-lanceolata, obtusa, 1–1·3 cm. longa, 5–6 mm. lata, coriacea, extra tomentella, intra dense puberula; petala interiora oblanceolata, subacuta, 7 mm. longa, circiter 2·5 mm. lata, coriacea, utrinque puberula. *Antherae* circiter 1 mm. longae. *Ovaria* non visa. *Monocarpia* 1–2-sperma, breviter stipitata, oblonga, teretia, apiculata, rarius subglobosa, 2–4 cm. longa, circiter 1 cm. crassa, dense adpresso-velutina. *Semina* leviter compressa, usque ad 2 cm. longa et 7 mm. lata.

Distrib. Sierra Leone: Yonibana, Nov., fr., *Thomas* 4701; 5005. Makump, July, fr., *Thomas* 968.

10. **O. obanensis.**—*Uvaria obanensis,* E. G. Baker in Cat. Talbot's Nigerian Pl., p. 1 (1913).

Distrib. Southern Nigeria.

11. **O. Dielsiana.**—*Unona Dielsiana,* Engl. in Engl. Jahrb. vol. xxxix. p. 476 (1907).

Distrib. Cameroons.

Cleistopholis discostigma, Diels, is probably an *Oxymitra,* since Diels states that it is allied to *C. albida.** We have not seen the flowers.

Popowia, *Endl.* Gen. Pl. p. 831 (1839); Benth. & Hook. f. Gen. Pl. vol. i. p. 25; Baillon, Adansonia, vol. viii. pp. 314, 339; Hist. Pl. vol. i. pp. 219, 284; Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 43. *Clathrospermum* (sphalm. *Clethrosperum*), Planch. in Hook. Ic. Pl. sub t. 767 (1848); Benth. in Hook. Niger Fl. p. 209, in adnot.; Benth. & Hook. f. Gen. Pl. vol. i. p. 29; Oliv. Fl. Trop. Afr. vol. i. p. 24. *Cleistochlamys,* Oliv. in Journ. Linn. Soc. vol. ix. p. 175 (1867); Fl. Trop. Afr. vol. i. p. 24; Benth. & Hook. f. Gen. Pl. vol. i. p. 956; Baillon, Hist. Pl. vol. i. pp. 206, 282; Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 36.

To the diagnosis of the African species of this genus given by Engler and Diels it may be added that the inner petals are sometimes imbricate, and the stigma is sometimes sessile. The

* Engl. Jahrb. vol. liii. p. 439 (1915).

genus *Popowia* was founded by Endlicher on a Javan plant, *Bocagea pisocarpa*, Blume, Fl. Jav. Anonac. p. 90, t. 45; and judging from this plate and the illustrations of the Asiatic species given by King,* it is questionable whether the African species really belong to the same genus, and it may be necessary to restore the genus *Clathrospermum* to accommodate them.

The reasons for the reduction of the genus *Cleistochlamys* have already been explained. The synonymy and distribution of its only species are as follows:—

Popowia Kirkii, Benth. in Trans. Linn. Soc. vol. xxiii. p. 470 (1862). *Cleistochlamys Kirkii*, Oliv. in Journ. Linn. Soc. vol. ix. p. 175; Fl. Trop. Afr. vol. i. p. 24; Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 36, t. 13 B; Diels in Engl. Jahrb. vol. liii. p. 440. *Unona parvifolia* var. *Petersii*, Engl. Pflanzenw. Ost-Afr. vol. C. p. 179.

Distrib. German East Africa, Portuguese East Africa.

P. littoralis, *Bagshawe & E. G. Baker* in Journ. Bot., July, 1908, p. 221. *P. Dawei*, Diels in Engl. Jahrb. vol. xli. p. 328 (Aug. 1908).

Distrib. Uganda.

P. littoralis was based on *Bagshawe* 629 from Buvuma Island and *Dawe* 191 from Busiro. *P. Dawei*, which was published a month later, was founded on *Dawe* 191.

P. sp. nov.—*Zenker* 3495 A (Cameroons), distributed as *Popowia Mannii*, is a new species, apparently allied to *P. filamentosa*, Diels. The flowers on the specimen in the Kew Herbarium are too young for description. They appear to be gyno-monoecious.

Unona, *auct.*, non Linn. f.

The type of the genus *Unona* is *U. discreta*, Linn. f.,† which was based on a tree collected in Surinam by Dalberg, and known by the vernacular name Peyricoboom. Dunal reduced the Asiatic genera *Melodorum*, Lour., and *Desmos*, Lour., to *Unona*;‡ and A. P. De Candolle still further enlarged the scope of the genus.§

Hooker and Thomson excluded the type species, and stated that *Unona* was entirely an Asiatic genus, although ascribing it to Linnaeus.‖ They recognised three sections comprising 13 species: 1, *Desmos*, with 6 petals, and carpels constricted between the seeds; 2, *Dasymaschalon*, with 3 petals, and carpels constricted between the seeds; and 3, *Pseudo-Unona*, with 6 petals, and unconstricted carpels. Bentham and Hooker gave the number of species as 18, including 4 or 5 African ones in addition to those recognised by Hooker and Thomson.¶

---

* Ann. Bot. Gard. Calcutta, vol. iv. pt. 3, tt. 159–165.
† Suppl. p. 270 (1781).
‡ Monogr. Anonac. p. 42 (1817).
§ Syst. vol. i. p. 485 (1818); Prodr. vol. i. p. 88.
‖ Fl. Ind. vol. i. p. 130 (1855).
¶ Gen. Pl. vol. i. p. 24 (1862).

Safford has recently pointed out that *Unona discreta* is a *Xylopia*, and that the Asiatic species hitherto included in *Unona* should be referred to *Desmos*.* Other authors consider that the section *Dasymaschalon* should be treated as a distinct genus.†

As stated under *Oxymitra*, four of the five African species of *Unona* recognised by Engler and Diels‡ should be referred to *Oxymitra*. The remaining one, *U. Stuhlmannii*, Engl., seems to approach some of the species referred to *Popowia* by Engler and Diels. We have not seen a specimen.

Uvaria, *Linn.* Sp. Pl. ed. 1, p. 536 (1753); Gen. Pl. ed. 5, p. 240 (1754); Benth. et Hook f. Gen. Pl. vol. i. p. 23.

We adhere to the generic limits of *Uvaria* as defined by Bentham and Hooker, and exclude the American genera *Porcelia*, *Sapranthus* and *Asimina*, which Engler and Diels have treated as sections of *Uvaria*.§ Apart from the presence of an aril, to which Engler and Diels seem to attach no importance, the characters of the gynoecium are sufficient to distinguish *Asimina* from *Uvaria*, as may be seen by comparison of the figures of *Asimina* given by Sargent‖ and Hemsley¶ with those of *Uvaria* given by King** and Engler and Diels.†† As to *Porcelia* and *Sapranthus*, the investigations of R. E. Fries have shown that these two genera are not even congeneric with each other.‡‡

Uvaria Thomasii, sp. nov.; similis *U. bipindensi*, Engl., a qua ramulis strigoso-pilosis flores gerentibus differt.

Ramuli graciles, patule strigoso-pilosi, sicco verrucosi. *Folia* oblonga vel leviter obovato-oblonga, subsensim acuminata, acumine circiter 2 cm. longo, basi rotundata, 5·5–14 cm. longa, 2·5–5 cm. lata, tenuiter chartacea, supra parce setulosa, demum nervis hirsutis exceptis glabra, infra praecipue in costa et nervis patule pilosa; nervi laterales utrinque 9–15, supra prominuli, infra prominentes, a costa sub angulo 50°–60° abeuntes, marginem versus flexuosi et ramosi; veni laxe anastomosantes, infra prominuli; petioli 5 mm. longi, dense setosi. *Flores* supra-axillares, solitarii, brevissime pedicellati, circiter 2·5 cm. expansi. *Sepala* late ovata, mucronulata, 5 mm. longa, 6 mm. lata, extra stellato-tomentella. *Petala* subaequalia, oblongo-lanceolata, circiter 1·2 cm. longa, 6–7 mm. lata, utrinque dense rufo-tomentella. *Stamina* numerosa; thecae 1 mm. longae, connectivo subcapitato rufo-tomentoso. *Carpella* tomentosa. *Fructus* non visus.

Distrib. Sierra Leone: Sendugu, June, *Thomas* 569.

---

* Bull. Torr. Bot. Club. vol. xxxix. p. 501 (1912).

† Dalle Torre et Harms, Gen. Siphonog. p. 174 (1901); Finet et Gagnep. Contrib. Fl. As. Or. fasc. ii. p. 141; Fl. Gén. Indo-Chine, vol. i. p. 104.

‡ Engl. Monogr. Afr. Pfl. vol. vi. p. 43 (1901).

§ Engl. Monogr. Afr. Pfl. vol. vi p. 7.

‖ Silva N. Am. vol. i. t. 15.

¶ Hook. Ic. Pl. t. 1514.

** Ann. Bot. Gard. Calcutta, vol. iv. tt. 4–28.

†† Engl. Monogr. Afr. Pl. vol. vi. tt. 1–8.

‡‡ Svensk. Vet.-Akad. Handl. vol. xxxiv. No. 5, p. 11 (1900).

Uvariastrum, *Engl.* in Engl. Monogr. Afr. Pfl. vol. vi. p. 31, t. 10, fig. B (1901).

The genus *Uvariastrum* was based by Engler on *U. Pierreanum*, Engl. (Gaboon), and was distinguished from *Uvaria* by the petals being all valvate, and the carpels being six in number or fewer, and from *Meiocarpidium* by the presence of simple hairs instead of peltate scales* (l.c. 5). In 1907 Engler and Diels described a new species, *U. Zenkeri* (Cameroons), and at the same time transferred *Uvaria dependens*, Engl. & Diels (Usambara) to *Uvariastrum*.† The last-mentioned species is described as having numerous carpels (l.c. 28).

The best distinguishing mark of *Uvariastrum* seems to have been overlooked by Engler and Diels, namely, that the sepals are truly *valvate* in *Uvariastrum*, whereas they are *open* in aestivation in *Uvaria* and *Meiocarpidium*. The genera *Uvaria*, *Meiocarpidium* and *Uvariastrum* may therefore be readily distinguished by means of the aestivation of their calyx and corolla and the nature of the indumentum:

1. *Uvaria*: sepals open in aestivation; at least the inner petals imbricate; stellate hairs present (except. sect. *Uvariodendron*).

2. *Meiocarpidium*: sepals open in aestivation; petals all valvate; indumentum of peltate scales.

3. *Uvariastrum:* sepals valvate; petals all valvate; hairs, when present, simple.

In accordance with these definitions, *Uvaria insculpta*, Engl. & Diels, and *Uvaria Elliotiana*, Engl. & Diels (l.c. 27, 28), should be transferred to *Uvariastrum*, bringing the number of known species up to five.

1. **U. Pierreanum,** *Engl.* in Engl. Monogr. Afr. Pfl. vol. vi. p. 32, t. 10, fig. B (1910).

Distrib. Gaboon.

2. **U. Zenkeri,** *Engl. & Diels* in Engl. Jahrb. vol. xxxix. p. 473 (1907).

Distrib. Cameroons.

3. **U. dependens,** *Engl. & Diels* in Engl. Jahrb. vol. xxxix. p. 474.—*Uvaria dependens*, Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 28, t. 9.

Distrib. Usambara.

4. **U. insculptum.**—*Uvaria insculpta*, Engl. & Diels in Notizbl. Bot. Gart. Berlin, vol. ii. p. 295 (1899); Engl. Monogr. Afr. Pfl. vol. vi. p. 27, t. 7, fig. D.

Distrib. Lagos, Cameroons.

5. **U. Elliotianum.**—*Uvaria Elliotiana*, Engl. & Diels in Engl. Monogr. Afr. Pfl. vol. vi. p. 28 (1901).

Distrib. Sierra Leone, Northern Nigeria, Lagos.

---

* The differences in the stigmas of *Meiocarpidium* and *Uvariastrum* mentioned in the key are not visible in the plate.

† Engl. Jahrb. vol. xxxix. p. 473.

Xylopia, *Linn.* Syst. ed. 10, p. 1250 (1759). *Unona,* Linn. f. Suppl. p. 270 (1781).

The type-specimen of *Unona discreta,* Linn. f. (1781) in the Linnean Herbarium is conspecific with *Xylopia salicifolia,* Humb. et Bonpl. (1817), and that species should therefore bear the name *Xylopia discreta.* Its synonymy and distribution are as follows:—

X. discreta.—*Unona discreta,* Linn. f. Suppl. p. 270 (1781). *X. salicifolia,* Humb. et Bonpl. ex Dunal, Monogr. Anonac. p. 121, t. 17 (1817); H.B.K. Nov. Gen. Sp. Pl. vol. v. p. 63; Mart. Fl. Bras. vol. xiii. pars 1, p. 42, in obs.; Benth. in Hook. Lond. Journ. Bot. 1843, vol. ii. p. 359; Pulle, Enum. Vasc. Pl. Surinam, p. 177.

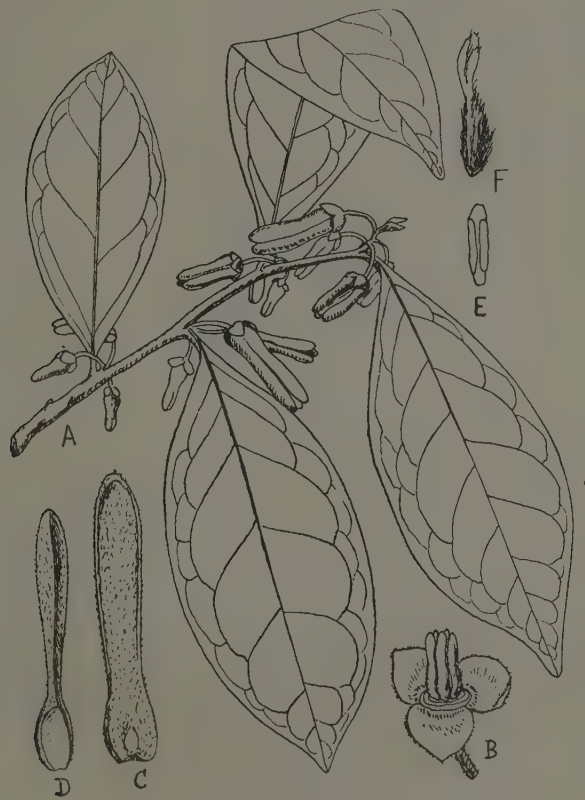
Distrib. Colombia, Venezuela, Guiana.

X. Lane-Poolei, sp. nov.; affinis *X. Elliotii,* Engl. & Diels, foliis conspicue acuminatis ad basin attenuatis infra glabris, pedicellis longioribus nutantibus, bracteis minoribus deciduis, petalis brevioribus obtusioribus differt.

Arbor erecta, alta; truncus rarius ultra 45 cm. diametro, cortice atrobrunneo obtectus; ramuli hornotini flexuosi, glabri vel minutissime puberuli, subglauci, internodiis brevibus 0·5–1·3 cm. longis. *Folia* oblanceolata vel obovato-oblanceolata, breviter et obtuse acuminata, acumine 3–5 mm. longo, ad basin sensim attenuata, 4–7·5 cm. longa, 1·5–3 cm. lata, subcoriacea, juniora parce puberula, mox utrinque glabra; costa media supra leviter impressa, infra prominens, subcarinata, basi circiter 1·25 mm. lata, ad laminae apicem angustissima, sicco minute verrucosa; nervi laterales circiter 7, graciles, utrinque prominuli, inferiores ascendentes, ceteri a costa sub angulo 45° abeuntes, arcuati, circiter 6–7 mm. intra marginem conjuncti, ultra juncturas intricate anastomosantes; venae supra obsoletae, infra sublaxe prominentes; petioli 4–5 mm. longi, 1·5 mm. crassi, minutissime puberuli et glaucescentes. *Flores* axillares, solitarii vel usque ad 3-nati, pedicellati, primum nutantes, demum ut videtur patuli; pedicelli 5–6 mm. longi, inferne circiter 0·65 mm. crassi, superne leviter ampliati, puberuli, cicatricibus bractearum mox deciduarum notati. *Sepala* late ovata, apice leviter mucronata, 2–2·5 mm. longa, 3–3·5 mm. lata, coriacea, extra tomentella, intra glabra. *Petala* exteriora late linearia, apice rotundata, ad basin leviter expansa, 1·5 cm. longa, ad 4 mm. lata, coriacea, dense et breviter adpresse pubescentia, intra basin subglabra; petala interiora exterioribus paullo breviora et angustiora, intra basin concavam 4 mm. longam glabra, ceterum breviter pubescentia. *Stamina* carpellis breviora; antherae conspicue locellatae, 1 mm. longae, connectivo oblique truncato lato sublobulato; filamenta brevia, lata. *Carpella* pauca, erecta; ovarium circiter 1·5 mm. longum, latere exteriore dense villosum, stigmate ellipsoideo subacuto 1 mm. longo apice minute hirsuto coronatum. *Fructus* non visus.

Distrib. Sierra Leone: Headquarters Distr.; Heddles Farm, Apr., *Lane Poole* 210. Freetown, March, *Dalziel* 956.

Vernacular—*Kpaini* (Lane Poole).



Xylopia Lane-Poolei, Sprague et Hutchinson.

A, flowering branchlet, nat. size; B, calyx and and pistils, × 4; C and D, outer and inner petals, × 3; E, stamen, × 5; F, pistil, × 10.

This species shows a very marked affinity with *X. Elliotii*, Engl. & Diels, which was collected by Scott Elliot in the Niger Basin to the north-east of Sierra Leone. In addition to the differential characters shown above, it may be noted that the slender and rather elongated branchlets of *X. Elliotii* are fairly densely clothed with long spreading rufescent hairs, and the leaves are very abruptly and shortly cuneate at the base and not or only slightly acuminate at the apex; the flowers of Scott Elliot's plant are white and sweet-scented, and, especially when in bud, they are much longer and not so stout as in *X. Lane-Poolei*.

XXVIII.—SIR ARTHUR CHURCH'S COLLECTION OF BOTANICAL DRAWINGS.

The water-colour drawings of plants by various botanical artists in the collection of the late Sir Arthur Church have recently been presented by Lady Church to the Royal Botanic Gardens, Kew. This interesting and valuable collection, which includes examples of the work of the more important early flower painters from the time of Simon Varelst, has been arranged at the expense of Lady Church on the walls of the small room, once Miss North's studio, adjoining her gallery, and is now open to public inspection.

Of the sixty-seven drawings presented by Lady Church, forty-six are to be seen on the walls, and the remaining twenty-one have been placed with the collection of drawings in the Herbarium.

In order to make as representative a display of the work of botanical artists as possible, twenty drawings, principally by more recent artists, have been selected from the collection preserved in the Herbarium and placed on the walls of the room with those presented by Lady Church.

Sir Arthur Church was so keenly interested in the welfare of the Royal Botanic Gardens and was always so ready to assist the Institution from his fund of special and peculiar knowledge that no more fitting memorial to him could have been devised than the presentation of his collection of drawings to Kew. In order that his memory may be preserved, the collection of drawings for the time being displayed in this room will bear his name.

In the following list the names of the artists are arranged in alphabetical order and the subjects of their pictures are given. In a few cases it will be noticed that two or three plants are included in one picture. Some particulars of the various artists have been compiled by Miss M. Smith, and these follow the alphabetical catalogue.

The drawings belonging to the Kew collection are marked (K).

Many of the drawings are on vellum.

Allport, Mrs. J. (2 Drawings.)	Ixia paniculata (K). Lilium longiflorum (K).
Bauer, F.	Erica coccinea (K).
Bond, G.	Tritonia crispa.
Brown, P. (4 Drawings.)	Amaryllis belladonna. Cotyledon orbiculata. Helleborus lividus. Yucca gloriosa.
Cambresier, J.	Tillandsia paniculata (K).
Chazal, A.	Crocus Boryi (K).
Cotton, Miss B.	Cattleya Loddigesii.
Curtis, J. (2 Drawings.)	Campanula sarmatica (K). Hiptage Madablota.
Duncanson, T.	Crotalaria quinquefolia.
Edwards, J.	Hollyhocks.

Edwards, S. T. (5 Drawings.)	Argemone mexicana and Rhododendron (Azalea) nudiflorum. Iris germanica, I. versicolor and I. variegata. Rhododendron caucasicum. Rhododendron ponticum and Robinia hispida. Tecoma radicans and Butomus umbellatus.
Ehret, G. D. (8 Drawings.)	Basella rubra. Cassia Marylandica. Daboecia polifolia. Iris variegata. Stuartia Malacodendron. Tulips (2 drawings). Veratrum album.
Fitch, W. H. (4 Drawings.)	Gentiana concinna (K). Rhododendron arboreum, var. (K). Rhododendron Dalhousiae (K). Rosa amabilis (K).
Fother, V.	Nerine sarniense.
Hooker, Sir J. D.	Rhododendron Thomsoni (K).
Hooker, Sir W. J. (2 Drawings.)	Oncidium barbatum. Rhododendron albiflorum (K).
Hooker, W.	Phlox maculata (K).
Huysum, J. van	Orange Blossom, Tulip and Rudbeckia.
Moggridge, J. T. (3 Drawings.)	Gentiana ciliata (K). Iris Chamaeiris (K). Ophrys arachnites, O. Scolopax, and O. apifera (K).
Nodder, R. P. (4 Drawings.)	Canarina campanulata. Erica australis. Erica cinerea. Mesembryanthemum aureum.
Power, A. (5 Drawings.	Aucuba japonica. Mirabilis longiflorum and M. jalapa. Podalyria calyptrata. Tecoma radicans. Yucca filamentosa.
Prêtre, T. G.	Crocus susiana.
Redouté, P. J.	Sedum Telephium.
Sowerby, J. (2 Drawings.)	Isotoma longiflora. Lachenalia tricolor.
Stothard, T. (2 Drawings.)	Campanula glomerata. Geranium pratense.
Varelst, S. (2 Drawings.)	Gentiana acaulis. Tulips.
Walton, Miss S.	Buddleia globosa.

Westcombe, Miss	...	Stapelia hamata (K).
Unknown Artists (6 Drawings.)	...	Argyreia Wallichii. Aster puniceus. Callistemon lanceolatum. Gourds. Punica Granatum. Rudbeckia triloba (Ehret ?).

Allport, Mrs. Julia.—She made many drawings of plants "in their native countries" between 1814 and 1844. These were presented to the Royal Botanic Gardens by Mr. J. M. Ludlow, C.B., in 1904.

Bauer, Franz.—Bauer was born at Felsberg, in Austria, on October 4th, 1758, and accompanied his friend Baron J. Jacquin to England in 1788. He became Botanical Painter to George III., and Resident Artist to the Royal Gardens, Kew, a post he held for 50 years. In 1791–1800 he published "Delineations of Exotic Plants," under the patronage of Sir Joseph Banks, in 1818 "Stretlitzia Depicta," and in 1830 38 "Illustrations of Orchidaceous Plants." He died on December 11th, 1840, aged 82, and a monument was erected to his memory in Kew Church.

Bolton, James (flourished 1775–95).—He was born in Halifax and contributed the Plates to Watson's "History of Halifax," 1775. He was author of "Filices Britannicae," 1785–90, and a "History of Funguses about Halifax," 1788–91. He also drew the plates for Relhan's "Flora Cantabrigiensis."

The drawing by him in Sir Arthur Church's collection has been placed in the Herbarium.

Bond, George.—A young gardener at Kew, who succeeded Thomas Duncanson in 1826 as Botanical Artist to Kew. In 1835 he became gardener to the Earl of Powis at Walton. His drawings of about 1700 plants are in the collection in the Herbarium.

Brown, Peter.—He was appointed Botanical Painter to the Prince of Wales. He exhibited at the Royal Academy between the years 1770–1791.

Cambresier, Jean.—Cambresier was one of many artists employed by M. Edouard Morren, of Liége, to draw his wonderful collection of Bromeliads; some of them are of great size, $2\frac{1}{2}$ feet by $3\frac{1}{4}$ feet. They were purchased by the Bentham Trustees in 1887 and presented by them to the Royal Gardens, Kew. He also contributed several plates to Morren's "La Belgique Horticole" between the years 1882–1885, when M. Morren died and the publication ceased to exist.

Chazal, A.—Executed several drawings on vellum of species of *Crocus* for J. Gay, which are now in the Library of the Royal Botanic Gardens. The drawings bear the dates 1831–1835.

Cotton, Miss Barbara.—She contributed 3 plates to the Transactions of the Horticultural Society, v. t. 12, 15, 18 in 1824, and also exhibited at the Royal Academy from 1815–1822, when her address seems to have been Chicheley, Newport Pagnell.

Curtis, John.—Curtis was born in Norwich in the year 1791, and in early life did much work, both drawing and engraving, for the Horticultural and Linnean Societies. After the defection of Sydenham Edwards he worked for the "Botanical Magazine" for some seven volumes. He was chiefly celebrated for his "Illustrations of British Entomology," 770 plates, and for many years he made a special study of insects injurious to farm and garden produce for the "Gardeners' Chronicle," under the pseudonym "Ruricola." He was elected a Fellow of the Linnean Society in 1820, and died in Islington in 1862.

Duncanson, Thomas.—He was a young gardener from the Royal Botanic Gardens, Edinburgh, and was employed by W. T. Aiton in 1822 to draw the plants in the Royal Gardens, Kew. He continued to do this until the summer of 1826, when he unfortunately became insane. He made upwards of 300 drawings which are in the Kew collection.

Edwards, John, Fellow of the Society of Arts (flourished 1768–95.—He supplied the text and plates of the "British Herbal," 1775, and of his "Collection of Flowers," 1795.

Edwards, Sydenham.—Born at Abergavenny in 1769. Edwards was educated as an artist by the kindness of William Curtis, the founder of the "Botanical Magazine." He was a regular contributor to the Magazine from 1799–1814 when he severed his connection with it, and started the "Botanical Register," with the assistance of J. Bellenden Ker. He brought out the "New Botanic Garden," 1805–7, and was elected a Fellow of the Linnean Society in 1804. The Genus *Edwardsia* was named after him. He died and was buried at Chelsea in February, 1819 (1822?).

Ehret, Georg Dionysius.—G. D. Ehret was born in Erfurt, Saxony, 1708 (1710?). His father being gardener to the Prince of Baden Durlach, while still very young G. D. Ehret painted the flowers in the Prince's gardens, and from these, numbering 500, Trew selected the ones for the "Plantae Selectae." He travelled in Switzerland and France, and when working at the illustrations for the "Hortus Cliffortianus" met Linnaeus and was instructed by him in drawing the structure of flowers. He came to England in 1740, and remained there till his death in September, 1770. Trew named the genus *Ehretia* after him. Among his patrons were the Duchess of Portland, for whom he drew 800 plants, Sir H. Sloane, 300 plants, Dr. Fothergill, 200 plants, and R. Willett, of Merly, Dorset. He drew the figures for Brown's "Natural History of Jamaica," but these are not in his best style. His skill and accuracy are almost unexampled, and the drawing of *Stuartia*, in Sir Arthur Church's collection is one of the finest examples of his work. He was elected a Fellow of the Royal Society in 1857.

Fitch, Walter Hood, was born in Glasgow on February 28th, 1817, and was early set to work drawing patterns for calico printers. Sir William Hooker had him trained as a Botanical Artist, and he soon showed the absolute accuracy, artistic charm, and great rapidity of execution which have made him a prince of botanical artists. An account of his work was published in the *Bulletin* for 1915, p. 277. He published a series of lessons on Botanical Drawing in the "Gardeners' Chronicle" in 1869, probably his only literary effort. The genus *Fitchia* was named after him. He was elected a Fellow of the Linnean Society in 1857 and died at Kew on January 14th, 1892.

Fother, V.—A drawing by him of *Capraria undulata* is in the Natural History Museum, South Kensington, but we have been unable to discover any authentic information about his career.

Hooker, Sir Joseph Dalton.—Sir Joseph was born on June 30th, 1817, at Halesworth, in Suffolk, and from the age of four was brought up at Glasgow in an atmosphere of Botany and Horticulture. An account of his life and activities is given in the *Bulletin* for 1912, pp. 1, 439, and we need only add here an appreciation of his facile skill and feeling as an artist. Fitch's illustrations of the Himalayan Rhododendrons were prepared from Sir Joseph's sketches, and no one who sees them can doubt that, had he been able to devote time to the art, he would have attained the highest eminence as a botanical artist. He died on December 10th, 1911, at Sunningdale, Berks, and is buried at Kew.

Hooker, Sir William Jackson, was born in Norwich on July 6th, 1785. He was Regius Professor in Glasgow University in 1820, and in 1841 became the first Director of Kew. He accomplished an immense amount of work himself, and it has been estimated that his numerous works have been illustrated by upwards of 8000 plates, of which he himself contributed 1800. For some 10 years he was the artist of the "Botanical Magazine," as well as Editor, and he himself illustrated his "Exotic Botany," his "Flora Boreali Americana," "The Botany of Beechey's Voyage," and some of his various "Journals of Botany." He died on August 12th, 1865, at Kew, and is buried there.

Hooker, William, was born in 1779, and was a pupil of Franz Bauer. He engraved and coloured Knight's "Pomona Herefordiensis" and Lambert's "Pinetum," and himself produced "Pomona Londinensis," 1813–1818. He was the artist to the "Paradisus Londinensis," to which R. A. Salisbury contributed the descriptions, and was engaged by the Royal Horticultural Society to draw the plates for their Transactions. He lived at Kew, and died there early in 1832.

Huysum, Justus van, lived at Amsterdam, where his celebrated son Jan was born in 1682. He himself was an artist of some reputation, and his technical skill is well shown by the drawing exhibited.

Moggridge, John Traherne, was born in 1842. Owing to bad health he wintered for many years at Mentone, and having inherited botanical tastes from his father and grandfather (L. W. Dillwyn), he brought out the "Contributions to the Flora of Mentone," for which he drew all the plates with great faithfulness and delicate charm; the text, also contributed by himself, contains interesting details of the plants. He was also the author of "Harvesting Ants and Trapdoor Spiders," beautifully illustrated by himself. He died in 1874.

Nodder, R. P.—An English painter of horses and other animals exhibited at the Royal Academy from 1786–1820. He was appointed botanical painter to George III., and after that exhibited a few flower pictures. No particulars of his life have been found.

Power, A.—He came from Maidstone and exhibited a flower piece and three studies from nature at the Royal Academy in 1800. There are two watercolours of his, of buildings and landscapes, in the British Museum.

Prêtre, T. G.—A number of beautiful drawings on vellum of the genus *Crocus* were executed by him for J. Gay between the years 1823–1830. They are now in the Library of the Royal Botanic Gardens, Kew.

Redouté, Pierre Joseph, was born in 1759 at S. Hubert, Pays de Liége, and died in Paris in 1840. He was early commissioned to draw plants for the King's Cabinet, and was appointed in 1792 Artist to the Académie des Sciences. He published his "Liliaceae" in 8 volumes in 1802, the text being by De Candolle and others, and he illustrated many other works: "Les Roses," the descriptions being by C. A. Thory; Desfontaine's "Flora Atlandica," "Choix des plus belles Fleurs," De Candolle's "Histoire des Plantes Grasses," etc. He has been called the Raphael of Flowers. The drawing bearing his name is somewhat doubtfully attributed to him.

Sowerby, James, was born in London on March 21st, 1757, and died at Lambeth on October 25th, 1822. In early life he was a teacher of drawing and portrait painting, and contributed most of the plates to the first volume of the "Botanical Magazine." He published his "Botanical Drawing Book" in 1789, and from 1789–97 appeared his "Flora Luxurians" or "Florists' Delight," a folio with coloured plates. With Sir James Smith he brought out "English Botany" in 36 volumes with 2592 plates between 1790–1814, also "British Fungi," 1797–1809, and "Exotic Botany," 1804–05. The genus *Sowerbaea* was called after him. He was elected an Associate of the Linnean Society in 1788 and a Fellow in 1793, and was also a Fellow of the Geological Society having great skill in drawing minerals.

Stothard, Thomas, was born in London in 1755. He was apprenticed, at an early age, to a calico printer, but soon went on to a higher branch of art, and studied at the Royal Academy. While there he illustrated "Town and Country Magazine." Bell's "British Poets," and the "Novelists' Magazine." He was elected an Associate in 1785, and a Royal Academician in 1794.

His works are said to have exceeded 5000 in number. Besides illustrating books he designed the frescoes on the staircase at Burleigh (Marquis of Exeter) and the ceiling of the Advocates' Library, Edinburgh.

Varelst (or Verelst) Simon, was born at Antwerp in 1604. He was an admirable painter of fruit and flowers. He came to England in the reign of Charles II., and obtained considerable reputation, not only for his flower painting, for which he was well qualified, but also for his attempts at portrait painting, for which he had no talent. He seems to have been much ridiculed for his efforts. He died in 1651.

Walton, Sarah, was a flower painter who exhibited in 1812. A drawing of *Cephalanthera grandiflora* by her may be seen at the Natural History Museum, South Kensington.

Westcombe, Miss.—She was one of three sisters living with their brother, Thomas Westcombe, at Worcester. She executed some charming and faithful drawings of Stapelias (and allied genera) which, together with numerous notes and the plants themselves, were presented to Kew on the death of Mr. Westcombe in 1893 at the age of 78. The family belonged to the Society of Friends.

XXIX.—MISCELLANEOUS NOTE.

Rosha Grass (*Cymbopogon Martinii*, Stapf).*—An interesting and comprehensive paper by R. S. Pearson (Forest Economist, Dehra Dun) on the distribution, present methods of distillation and outturn of this grass and the uses and market value of the oil prepared from it is to be found in the Indian Forest Records, vol. v, part vii (April, 1916). A map showing the distribution of the principal areas of Rosha grass in Central India is interesting as it differentiates between the two varieties known as "Motia" and "Sofia." New observations concerning the ecological conditions under which these varieties occur are given and there is no doubt that they yield chemically distinct oils; but the morphological differentiation is still obscure. Experiments, however, are now carried on at Dehra Dun to see how far the chemical characters can be connected with morphological features recognisable in the field and in dried material. Rosha oil (both Motia and Sofia) is used all over India for the manufacture of native "attars" or the adulteration of "attar" of roses, and to some extent also for medical purposes. The output of Rosha oil from the 1st of July, 1912, to the end of June, 1913, is estimated at 150,000 lbs. valued at 750,000 Rs., which was more than half as much again as in the preceding years, when India and Arabia each took on the average 20,000 lbs., and Europe 60,000 lbs. The mode of production is still rather crude and not as profitable as it might be if steam-distillation were introduced which would save fuel, improve the quality and raise the quantity of oil very considerably.

A "Note on the Constants of Indian Geranium Oil (Motia)," by Puran Singh, Chemical Adviser, Dehra Dun, is added to Mr. Pearson's Paper. O. S.

* See *Kew Bulletin*, 1906, pp. 335–341.

FIG. 1.

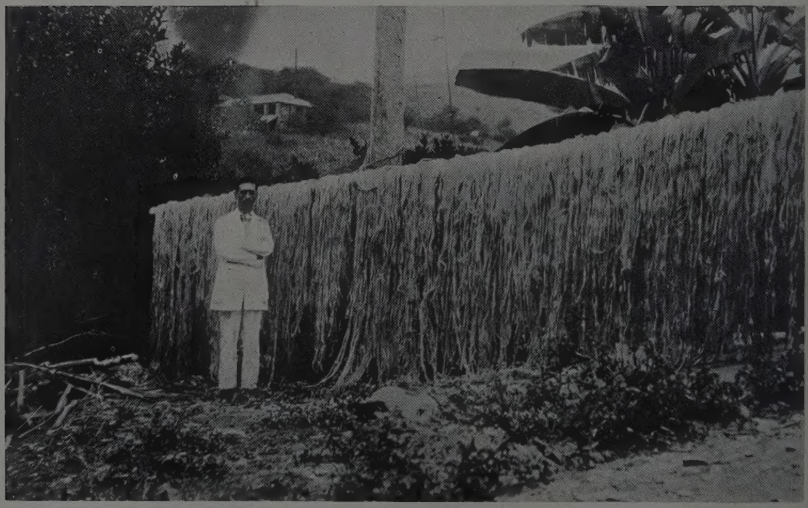


FIG. 2.

FIQUE.

To face page 169.]